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ABSTRACT

This paper examines assumptions about second language acquisition, bilingualism, and language planning that underlie Singapore's bilingual education policy, noting how the experience in Singapore illuminates current theories in second language acquisition and language planning. In Singapore, English is promoted as the "working language," while Mandarin, Chinese, Malay, and Tamil are considered mother tongues of the major ethnic groups. In the late 1970s, the government adopted a bilingual education policy which requires that all students study their subject matter curriculum in English and all students achieve proficiency in their mother tongue. Singapore's national exams usually show upward trends for all ethnic groups, though there is an achievement gap between the Chinese majority and the Malay and Indian minority groups. Although Chinese students consistently outperform the other groups, and a greater proportion move on to higher education, each ethnic group shows strengths in different areas. Singapore's language policy reflects many common assumptions about language learning (e.g., beginning a second language early leads to higher proficiency). It also reflects many assumptions concerning language planning (e.g., language is a tool that should be carefully chosen for its utility to the national interest). (Contains 38 references.) (SM)

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1. Introduction

Widely hailed as an educational success story, Singapore, a multilingual island nation in Southeast Asia, embraces an officially bilingual education policy. English is the medium of all content-area education from the start of schooling, with students' official "mother tongue" required as a single subject. Although called the student's "mother tongue," these languages may not be the student's home language, resulting in many students studying two non-native languages in school. I will address the following questions in this paper: What assumptions about second language acquisition, bilingualism and language planning underlie Singapore's bilingual education policy? How does the case of Singapore illuminate current theories in second language acquisition and language planning?

2. Singapore's Bilingual Education Policy

Singapore is comprised of three major ethnic groups in the following proportions: Chinese 77%, Malays 14% and Indians 8%. These proportions have remained stable since around 1900 (Chua 1964). In 1959 when Singapore gained self-rule from Britain, Singapore chose to become an officially multilingual state, selecting four official languages: English, Mandarin Chinese, Malay and Tamil. English is promoted as the "working language" of Singapore for inter-ethnic communication, while the other official languages are considered "mother tongues" of the major ethnic groups.

The choice of these "mother tongues" is interesting. At independence in 1965, virtually no ethnic Chinese in Singapore spoke Mandarin as their predominant home language (Afendras and Kuo 1980). Additionally, only 60% of Indians in Singapore in 1957 spoke Tamil as their home language. Only Malays were assigned a mother tongue that corresponded to the language they spoke at home.

In 1966, parents could choose education through any one of the four official languages (English, Mandarin, Malay, Tamil) but all students also had to study one of the other official languages, English for students in the non-English-medium schools (Yip, Eng and Yap 1990). The government then required all schools to teach math and science in English starting with first grade. By 1979, parents stopped enrolling their children in Malay- and Tamil-medium schools, and Chinese-medium enrollment was down to about 10% of the entering cohort. The government then adopted the bilingual education policy that is, with a few modifications, currently in place: All students study their subject-matter curriculum through the medium of English, but they are also required to reach a "second-language" level of proficiency in their official mother tongue – Mandarin for Chinese, Malay for Malays and Tamil for Dravidian-speaking Indians.

More recently, for Indians who speak Indo-European languages at home, Hindi, Punjabi, Bengali, Urdu and Gujarati are offered as options for mother tongue study in "community-run weekend … classes" (Saravanan 1999, p. 174). With an area only 3.5 times the size of Washington, DC (CIA 2001), Singapore's diminutive size and public-transit infrastructure allows for easy consolidation of students who speak lower-incidence Indian languages for instruction. Though the government offers these languages as subjects in the national examinations, it does not fund or provide facilities, teachers, or teacher training for classes in these non-official languages (Kaur and On 2001).

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3. Does it Work?: Educational Outcomes in Singapore

Singapore's education system has been hailed as a great success due to its first-place mean score in math (Mullis et al. 1999) and second-place in science (Martin et al. 1999) compared to 38 countries on IEA's Third International Math and Science Study-Repeat (TIMSS-R). A total of 4966 Secondary 2 (8^{th}-grade) students from all Singapore schools participated (Mullis et al. 1999). Students from all streams, including the Normal-Technical stream, were represented (Ministry of Education 2001b). Only 27% of Singapore's students reported "always using the language of the test (i.e. English) at home" (Ministry of Education 2001b), while three-quarters of participating countries had 80% or more of their students speaking the language of the test at home. The TIMSS-R results confirmed Singapore's high scores from the previous TIMSS in 1995.

Since TIMSS (1995) tested grades 3, 4, 7 and 8, it was possible to track how the P4 cohort performed four years later, at Secondary 2 (grade 8, the only grade tested by TIMSS-R). The Singaporean P4 cohort held its top rank in mathematics by S2; however, they improved their science score from about average to the top (Ministry of Education 2001b). Besides looking at the mean score, TIMSS analyzed the proportion of students that reached international benchmarks. For Singapore, about one-third of its students reached the top 10% benchmark, with two-thirds at the upper-quarter benchmark and fully 90% of their students at the median benchmark. Virtually all Singaporeans reached at least the lower-quarter benchmark. In other words, 90% of Singapore's students did as well or better than half of the students in all other participating countries combined. Strict standards for population selection, testing conditions and quality control were observed by IEA in order to ensure the best possible comparison across nations (Martin, Hoyle and Gregory 1996).

Judging from the TIMSS results, most Singaporean students seem to master English well enough to learn math and science content at a high level of achievement. But how do Singaporean students fare in tests of English language skills themselves?

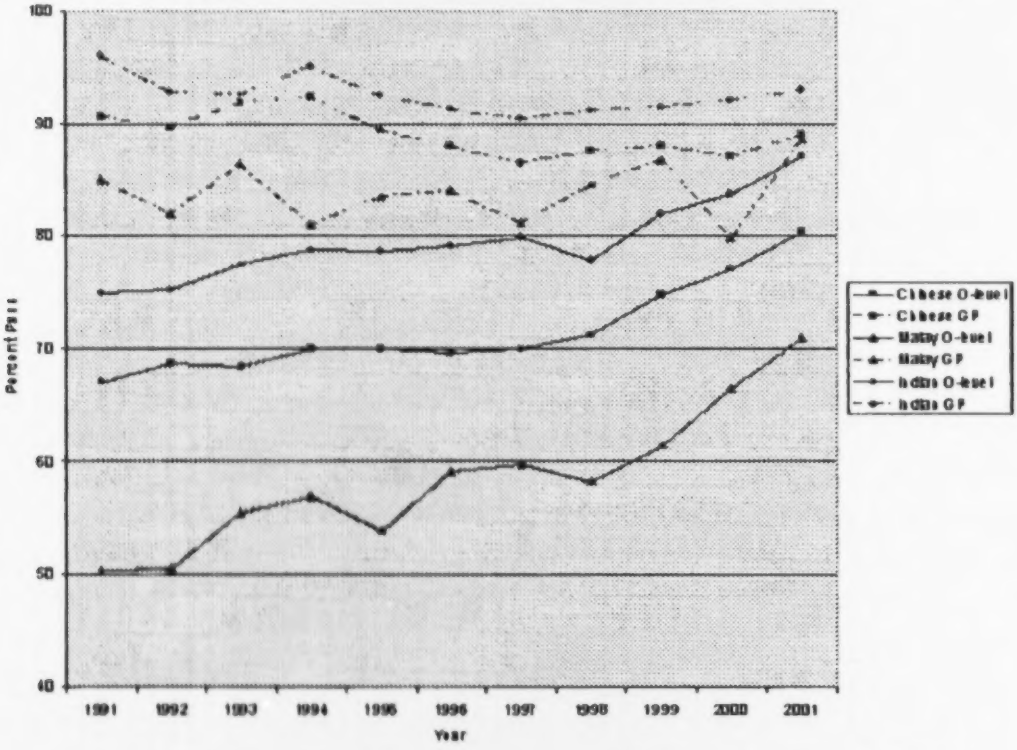
The thirty-five country IEA Progress in International Reading Literacy Study (PIRLS) 2001, which tested 10-year-olds (with four years of schooling) on reading for literary purposes and reading for informational purposes, provides an interesting source of evidence of Singaporean students' English reading skills (Mullis et al. 2003). Overall, Singapore's Primary 4 (P4) students scored significantly higher than the international average and fifteen countries, not significantly different from Scotland, New Zealand and six other nations, and significantly lower than England, the United States and nine other countries. For both literary and informational purposes, Singapore performed significantly better than 15 countries, and did not significantly differ from eleven and twelve countries, respectively, including the US on reading for informational purposes. Singapore, at 43%, was one of only four countries in which less than half of their students "always" or "almost always" spoke the language of the test at home. Despite the status of English as a non-native language for the majority of Singaporean students, Singapore's scores compare favorably to countries in which the majority of students speak the language of instruction at home.

The international comparisons do not compare the different ethnic groups within Singapore. Singapore's Ministry of Education releases some of its own exam results by ethnicity. On the Primary School Leaving Exam (PSLE), required of all students after six years of elementary education, overall 97.7% of Singaporean students in the top (EM1) and middle (EM2) streams passed in 2001 (Ministry of Education 2002), with little variability by ethnic group (95.7% of Malays, 98.0% of Chinese and 98.2% of Indians). In other words, for the approximately 95% of Singaporean students who make it into the regular and elite tracks for upper primary school, virtually all of them pass their English exam, regardless of ethnicity. This would indicate that English may function as a "neutral" language, giving no ethnic group an advantage, at least at the primary level. Students in the lowest (EM3) stream take a "Foundation English" exam and are not included in this figure; this group probably includes a disproportionate percentage of Malays and Indians, as reflected by differing PSLE pass rates.

What happens at the secondary level? Since 1995, over 60% percent of students from Primary 6 each year entered the "Special" or "Express" streams. Since 1998, an additional 50% or so of the

"Normal" stream students took the Cambridge O-levels[1] after a fifth year of study. O-level results, therefore, already exclude the bottom 20% of students. Despite this exclusion, a disparity between the ethnic groups exists on the English exam (see Figure 1), which includes oral, aural, reading comprehension, vocabulary and writing components. Over the years, Indians have consistently outperformed other ethnic groups on the English O-level exam (Ministry of Education 1997); in 2001, about 87% of Indians passed English, whereas 80.4% of Chinese and only 70.9% of Malays passed (Ministry of Education 2002). All ethnic groups have improved their pass rates since 1988 (Ministry of Education 1997; Ministry of Education 2002), with the gap between the ethnic groups narrowing as well.

Figure 1. The graph below depicts the percentage of each ethnic group (Chinese, Malay and Indian) that passed the O-level exam in English and the AO-level exam called General Paper (GP). Data Source: Singapore Ministry of Education



Only the most academically able prepare for A-level exams, the top 30% of O-level takers (Ministry of Education 2001a). Most students do not take the English literature exam, but all must pass the General Paper (GP), technically an "AO"-level exam, to qualify for university. The GP consists of general English reading comprehension questions with one long essay on a social or political topic, so GP results may be used as a measure of English reading and writing skills. At this high level, all three ethnic groups post high pass rates. Since 1991, 80-85% of Malays, 90-96% of Indians, and 86-92% of Chinese have passed their GP (see Figure 1). For Chinese and Indians, achievement seems to have leveled off after a decline from highs in 1994, whereas Malay performance has fluctuated with a tentative upward trend since 1994 interrupted by a major dip in 2000.

[1] The University of Cambridge (UK) Local Examinations Syndicate offers examinations worldwide based on the exams used in the UK educational system in standard academic subjects. Content-matter subjects are examined in English; students in over 150 countries take these exams for their international recognition (UCLES, 1997-2002).

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In general, Singapore's national exams show usually upward trends for all ethnic groups, but with an achievement gap between the majority Chinese and the Malay and Indian minority groups (Ministry of Education 2002). Although Chinese consistently perform better overall and a greater proportion move on to each higher level of education compared to the Malays and Indians, each ethnic group shows strength in different areas. The Malays outperform Chinese and Indians on their "mother tongue" exams; Indians perform better on the English exams; and Chinese perform better on the math and science exams.

4. Second Language Acquisition Assumptions Underlying Singapore's Policy

Many implicit, and some explicit, assumptions concerning second language acquisition and bilingualism underlie Singapore's bilingual education policy. Most of these assumptions are based on commonly-accepted views of language learning. Below I will show how Singapore's policy is based on or reflects each assumption in turn.

4.1 Beginning a second language early leads to higher proficiency

Singapore's policy of emphasizing L2, English, from the beginning of formal schooling clearly stems from a belief that children will learn English better the earlier they start learning the language. Lee Kuan Yew, main architect of the education policy, made this assumption explicit:

> Language is a key to the acquisition of knowledge. If a student is unable to understand a language, then he is unable to receive information or knowledge in that language. It is therefore crucial that a breakthrough must be made in the English language as early in life as possible (Straits Times, May 29, 1982, as cited in (Platt 1982, p. 31).

This statement was part of a speech urging Malays to increase their use of English in order to improve the educational achievement of their children. This assumption is also shared widely by parents, who send their children to English-medium preschool programs to prepare them for the English-language demands of primary school (Sharpe, 1997). In the next section I will relate this assumption to the theory in second language acquisition.

4.2 Home language development is not academically helpful to development of English language skills

As indicated above, Lee Kuan Yew believed the path to academic success in English was to use English more. In the above-cited speech, Lee expands on this idea:

> Parents have to decide on the trade-off between the convenience of speaking in Malay or the mother tongue at home with their children at the cost of EL1 [English studied at a "first language" level]. If they want their children to do well in EL1, their children must also, besides Malay, speak English at home (Platt 1982, p. 32).

Although Lee does not go so far as suggesting a total switch in household use from Malay to English, he clearly indicates that greater home use of English, rather than further development of Malay language skills, will lead to academic success in English. Thus, although Singapore's education policy is bilingual by requiring study of the student's official "mother tongue" as a subject within English-medium schooling, the two languages are kept separate and proficiency in one is not considered helpful in gaining proficiency in the other. Further, when the policy began, only Malays were guaranteed study in their actual home language; a majority of Chinese and many Indian students studied their official "mother tongue" which was not in fact their home language. For Chinese in particular, the government did not consider development of the Chinese "dialects" usually spoken at home as helpful for gaining proficiency in either English or Mandarin Chinese; rather, dialects were

seen as an impediment to learning the official languages and were targeted for elimination (Lee 2000) (Newman 1988; Riney 1998).

4.3 More time devoted to learning a language will result in greater proficiency in the language

When Singapore still used four languages as media of instruction, English was taught as the common L2 in the non-English-medium language streams. When the students were not achieving a high level of proficiency in English, the government required mathematics and science to be taught through the medium of English at all schools (Yip, Eng and Yap 1990). Although the landmark *Report on the Ministry of Education* (Goh 1979) cited evidence that this strategy was not improving students' English proficiency and in fact had led to a decline in science achievement among Chinese-medium students, Lee Kuan Yew specifically took exception to this finding in his response to the report:

> Your team concluded that LET [Language Exposure Time] did not improve standards of English in Chinese-stream schools although Science and Mathematics were taught in English.... This is contrary to my own learning experience and my personal observations of students. The more you hear a language spoken, the easier it is for you to understand and to speak it.... (Goh 1979, p. vi).

Lee holds on to the assumption that it is *time on task* rather than *quality of input* that is key to learning a language. Faced with poor English results, teaching methods were not overhauled; rather, the amount of time devoted to English was increased.

4.4 Learning to read both an alphabetic and a logographic writing system is more difficult than learning to read in two alphabetic languages

When multiple language streams were abandoned in favor of English as the medium of instruction, a "monolingual" stream was proposed for students who could not handle the demands of learning two languages. The objective of this stream was to ensure that students become literate in at least one language, with some oral proficiency in L2. The choice of this language was different for the different language groups:

> Pupils with an English, Malay or Indian speaking home environment should be taught mainly in EL [English Language]. It would not be difficult for the Malays and Indians to learn the English Language because of the similarities between Malay/Tamil and English. Romanised Malay uses the same alphabet as English. Malay and Tamil are both phonetic languages unlike Chinese. Pupils with a Chinese home environment should be taught mainly CL [Chinese Language] with some oral English (Goh 1979, p. 6-2).

Although this "monolingual" stream was later abandoned in favor of the EM3 stream – English as a first language for these students with only oral mother tongue – the assumption remains that Chinese students have an added "burden" of learning two very different writing systems. Another manifestation of this assumption is the additional resources allocated to the top-stream students who study Chinese and English at the highest levels in the so-called "Special Assistance Plan" schools (Gopinathan 1999).

4.5 Ability to learn more than one language is related to general education achievement

Students in Singapore are currently "streamed" (tracked) at the end of their Primary 4 (~4th grade) year according to their achievement in the first four years of formal schooling (Gopinathan 1999). Their achievement in all subjects is examined, not just language results. Only the top 20% of students are admitted to the elite "EM1" bilingual stream, where students learn both English and Chinese at a "first language" level in primary school. The majority of students are placed in the "EM2" stream,

where all subjects are learned through the medium of English and the mother tongue is learned as a subject at the "second language" level. For these students, average academic achievement overall means a limited opportunity to learn their mother tongue. For the lowest 10% or so, students develop literacy skills only in English, with oral proficiency offered in the mother tongue. As Lee Kuan Yew explains:

> Except for the top 8%, a wide vocabulary and high language manipulative skills cannot be the primary aim of L2 ["mother tongue"].... With English as our working language, for the average student, emphasis on Chinese diction, idiom and style will be too much for them to cope with (Goh 1979, p. v).

In this view of education, some students are stronger, while others are weaker, at learning in general; only the stronger students can handle a high level of language proficiency and literacy in two languages.

4.6 Maintaining the ethnic language will protect ethnic identity, a sense of "rootedness" and cultural values

The goal of Singapore's bilingual education policy is not in fact to create a general populace who are bilingual and biliterate at a high level; this privilege is reserved for only the best students. With the emphasis on English, what, then, is the purpose of studying a second language, the mother tongue? In discussing Chinese language education, Lee Kuan Yew writes:

> The greatest value in the teaching and learning of Chinese is in the transmission of the norms of social or moral behaviour. . . .
>
> It would be a tragedy if we were to miss this and concentrate on second language proficiency nearly equal to the first language. Malay children should know their proverbs and their folklore.... For the Indians, the Ramayana and the Mahabaratha provide marvellous and inexhaustible sources of stories.... That they also carry a moral message is the genius of the culture. No child should leave school after 9 years without having the "soft-ware" of his culture programmed into his subconscious (Goh 1979, p. v).

Early on, English was seen as the language of science and technology, while the mother tongues were designated the transmitters of cultural values and norms. However, the government has not apparently tried to judge the success of passing on traditional values through the mother tongues. The success of the "Speak Mandarin" campaign is measured by the shift of language use at home, work, and in everyday transactions to Mandarin, not the maintenance of Chinese cultural values (Newman, 1988; Riney, 1998). In fact, it has been claimed that although Indians have undergone the greatest language shift to English, they have maintained their traditional values more than Chinese (Riney, 1998). If this is the case, factors other than language must be responsible for the maintenance or loss of traditional values.

5. Second Language Acquisition Assumption #1: Beginning a second language early leads to higher proficiency

5.1 Critical or sensitive period hypothesis

The assumption that beginning a second language early leads to higher proficiency is a commonly-held view. This assumption jumps right into the heart of the *critical* or *sensitive period* hypothesis debate among second language acquisition researchers. The critical period hypothesis refers to the view that there is a critical (or sensitive) period for language acquisition, usually set at puberty, after which learners find it difficult if not impossible to acquire a second language at native-like levels of proficiency. One of the commonly-cited pieces of evidence for the critical period hypothesis is Johnson and Newport's (1989/1995) study of Chinese and Korean adult L2 speakers of English who had arrived in the US at different ages. They found that adults (all with at least 3 years of

unbroken residence in the US) who had arrived before puberty performed better on tests of grammaticality judgment than those who had arrived after puberty. However, Birdsong (1992), studying a group of non-native speakers of French, all of whom arrived in France after puberty, found that many of these highly-proficient L2 learners achieved scores within the native range on tests of grammaticality judgment. Birdsong still found an effect of age of arrival, indicating that even after puberty younger learners may have an advantage over older learners in ultimate attainment. In reviewing the relevant literature on the critical period hypothesis, Marinova-Todd, Marshall and Snow (2000) concede that younger learners as a group outperform older learners as a group; however, the existence of highly proficient older learners raises questions about what factors explain the more variable outcomes of older learners rather than confirming a biological advantage for younger learners.

Furthermore, both Johnson & Newport and Birdsong examined L2 learners immersed in the target-language environments. What evidence exists concerning the introduction of a second language early to school L2 learners who are studying the L2 in a non-native context? Turnbull, Lapkin, Hart and Swain (1998), comparing early (about age 5-6), middle (about age 10), and late (about age 12) French immersion students in Canada, found that early immersion students seemed to perform better mostly on speaking skills, despite many more hours of French exposure; no significant differences were found in French literacy skills and on a multiple-choice test of listening skills. These Canadian studies suggest that Singapore could still have highly successful English results even if English-medium education were started around age 10 or 12.

5.2 Input Hypothesis

If there is no biologically-determined "critical period" for L2 acquisition, then what accounts for older learners' often poor outcomes? The "input hypothesis" proposes that the success of L2 acquisition is largely determined by the quality of the L2 input the learner receives; by this theory, younger learners' more uniform success in L2 acquisition results from the high-quality, contextualized L2 input younger learners experience (Krashen 1982). Proponents of this hypothesis claim that if a teacher provides an older learner with the kind of high-quality, contextualized input that a child more naturally receives, the older learner will similarly show success in L2 acquisition. The focus then shifts from the age of the learner to the teaching methods employed, with input enthusiasts championing "naturalistic" techniques such as Total Physical Response (Asher 1996). Singapore has moved recently from a more traditional teacher- and textbook-based language pedagogy to a more communicative approach to language learning (Cheah, 1999). However, there is no suggestion that this new approach could be used with older students to delay introduction of English while maintaining high levels of achievement.

5.3 Transfer Hypothesis

Although younger learners have generally demonstrated better ultimate attainment in L2 acquisition, older children and adults may learn an L2 more quickly at the initial stages (Marinova-Todd, Marshall and Snow 2000; Turnbull et al. 1998). The transfer hypothesis posits that concepts that are learned through the L1 can transfer easily to the L2 (Cummins 1979); for example, a child who has learned to solve division problems in his or her L1 need only learn the vocabulary in L2 necessary to understand the problem posed, rather than the concept of division itself. In addition, it is proposed that high levels of L1 proficiency aid a learner in achieving high levels of L2 proficiency (Cummins 1981). Singapore does not attempt to build English language development on a foundation of home language skills; rather, the two languages are considered separate subjects that do not help and may even interfere with each other.

6. Language Planning Assumptions Underlying Singapore's Policy

Implicit in Singapore's language policy are many assumptions concerning language planning. Perhaps the most striking is the assumption that language can be managed, that government policy can dictate language use. Several of these assumptions are discussed below.

6.1 Language is a tool that should be carefully chosen for its utility to the national interest

At independence, Singapore could have discarded its colonial language, English; it could have adopted three official languages (one for each major ethnic group) or many more, to reflect the diversity of home languages in use at that time. However, the official languages were not chosen on the basis of national or ethnic pride; instead, they were chosen for pragmatic reasons. English was assumed to be crucial to Singapore's economic survival; the "mother tongues" were adopted to maintain ethnic identity and traditional values (Lee 2000). The assumption that language is a tool is examined more closely, in light of language planning theory, in the next section.

6.2 A "language" is different from a "dialect," and only standardized languages are appropriate vehicles for education

In Singapore, each ethnic group is assigned an official mother tongue, whether or not this is the language the individual speaks at home. Chinese dialects in particular, as well as non-standard forms of Malay and colloquial varieties of the Indian languages, are not considered to be real "languages" appropriate for classroom use. Since 1917, all Chinese-language instruction in Singapore has been in Mandarin, a standardized language (Ang 1999). The government promotes Mandarin as the appropriate vehicle with which Chinese can pass on their cultural traditions and values. Similarly, classical Tamil, rather than the colloquial variety actually spoken in Singapore, is used in the schools.

Interestingly, children's linguistic resources were largely ignored by this policy. For the Chinese majority, who in the beginning mostly came to school dominant in a Chinese dialect, dialects were seen as an impediment to learning Mandarin Chinese and English (Lee 2000). However, Newman (1988) reports that a proficient Hokkien speaker, drawing on analogies between the two languages, would be able to predict the Mandarin tonal pronunciation of a given word 90% of the time; but this potential advantage in learning Mandarin was dismissed in favor of urging all Chinese to abandon dialects and use Mandarin at home and with other Chinese.

6.3 The government should encourage the use of high-status languages

Related to the above assumption, the Singapore government actively encourages the use of "Standard" (British) English over a localized variety of English often called "Singlish" as well as Mandarin over Chinese dialects.

6.4 Each written language has a standard oral version as well

In Singapore, pronunciation and oral usage are also causes for concern from the language planners. "Proper" British pronunciation of English is promoted, as is the use of Mandarin when reading Chinese characters, which could be pronounced in any of the Chinese "dialects." Additionally, the formal literary register of Tamil is used at school and in the media, while a standardized Malay pronunciation based on Northern Malay is being promoted (Gopinathan et al. 1999).

7. Language Planning Theory and Assumption #1: Language is a tool that should be carefully chosen for its utility to the national interest

This assumption follows an essentially instrumentalist view of language, as espoused by Tauli (1968) and others. Instrumentalists view language as a tool or instrument, and believe that languages or features of a certain language can be objectively evaluated to determine which is more efficient for different language functions (Appel and Muysken 1987). By this theory, a government could carefully compare the potential candidate languages and determine which one is best suited for various government goals. Singapore's officials looked at the major languages in use in Singapore at

independence and believed that only English could help Singapore industrialize and modernize its economy (Yip, Eng and Yap 1990).

A sociolinguistic theory of language planning, however, argues for the basic equality of all languages and denies that one could be considered better for a certain purpose than another (Appel and Muysken 1987). Sociolinguists see language as a complex human resource, which is tied to social and cultural circumstances and cannot be objectively "evaluated" outside these contexts. In other words, a sociolinguist would disagree that English is better suited for the study of science and technology, though acknowledging that it may at this time be more developed in that direction than another language (Eastman 1983). Sociolinguists stress the importance of examining the whole context for a language – its use in various domains, the social status of the language, and its role in identity formation – before making any attempts at language planning (Appel and Muysken 1987).

The validity of this assumption depends on one's theoretical viewpoint and cannot be empirically proven.

8. Conclusions

The Singapore case seems to lend credence to both the instrumentalist and sociolinguistic views of language planning. Instrumentalists may champion the success of the Speak Mandarin campaign, which promoted a created standardized language over home dialects despite little evidence of a pre-existing trend in that direction. Chinese were increasingly sending their children to English-medium schools, which might have killed Mandarin in Singapore if the government had not required Mandarin as a school subject and promoted its use outside school. However, sociolinguists can point to the shift to English as an example of a government simply encouraging the existing sociocultural trend. The government waited to institute English-medium education for all until the vast majority of parents had already chosen it.

Singapore's experience does not resolve any of the ongoing debates in the field of L2 acquisition, as it followed a uniform policy and did not experiment with early vs. late introduction of English, differing amounts of English exposure, or diverse pedagogies. It is tantalizing to speculate on whether Singaporean students would demonstrate even better academic results if they all received substantial education in their actual home languages. However, it certainly shows that a nation can successfully implement widespread education through a non-native medium starting at an early age with little home-language development and achieve good academic results. Whether these results are replicable in countries with very different circumstances remains an open question. Singapore began its nationhood with a serious crisis, perhaps leading its people to accept governmental policy more readily, especially as promised stability and economic gains materialized.

While Singapore seems to have achieved the major goals it set for language and education policy, the loss of some of the rich linguistic diversity and the shift from multilingualism to bilingualism may have unintended consequences. Pakir (1993) reports that in an interview with Taiwanese journalists in 1989, Lee Kuan Yew

> said that if he had had the chance to go back to 1965 or 1970, he would have kept the Chinese primary school, increased the English in it as the second language, and encouraged parents to send their children to the Chinese language school. Then, he would have given an additional year (either at primary or secondary level) to help the average student change from Chinese as First Language learning to English as First Language learning (Pakir 1993, p. 83).

This same principle could have been extended to the Malay- and Tamil-medium schools as well. Would there have been a difference in attainment of English? In attainment of mother tongue? In overall educational achievement? In economic success? Or, as Lee believes, in maintenance of traditional values? Would those students who currently perform poorly in English demonstrate better academic results, overall and in English, if they received more schooling through their home language? One cannot turn back the clock to try a different scenario; however, other countries looking to replicate Singapore's educational and economic success should consider these questions in their own context.

Now, Singapore seems on an unalterable course from a diverse multilingualism to a more uniform bilingualism in English and one other official language. As the trend toward English and official languages continues, will Singapore become more of a monolingual English-speaking country, with mother tongues reduced to a school subject only? Will Chinese dialects and Indian vernaculars disappear altogether or enjoy a symbolic revival? Will a shift to English dominance impair the transmission of traditional values to the next generation? The Singapore case will continue to offer fascinating data to language planners, educational policy analysts, and L2 acquisition researchers for decades to come.

9. Future research

Many avenues would prove fruitful for future research. An ethnographic study on actual home and community language use would illuminate how much and for what purposes each language is used in Singapore today. A closer examination of the English language and "mother tongue" skills of students in all the different educational tracks would indicate who wins and loses under the current policy and what happens to those students who do not master English. For my own future research, I will look at the English oral-language and preliteracy skills of kindergarten children before they enter Primary One. How much English proficiency do children gain in two years of kindergarten? What home and school factors may contribute to English proficiency in Kindergarten 2 pupils?

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